

**COLLAPSIBLE SUPPORTING DEVICE FOR A PORTABLE COMPUTER
CROSS-REFERENCE TO RELATED APPLICATION**

This application claims priority of Chinese Application No. 03153018.4, filed on August 5, 2003.

5 **BACKGROUND OF THE INVENTION**

1. Field of the Invention

The invention relates to a supporting device, more particularly to a collapsible supporting device for a portable computer.

10 **2. Description of the Related Art**

Generally, a portable computer is disposed directly on a table surface during use, which results in a poor heat-dissipating efficiency. Furthermore, it is not ergonomical for a user to operate a portable computer that is disposed directly on a table surface.

Therefore, the object of the present invention is to provide a collapsible supporting device for a portable computer that can enable the portable computer to be ergonomically operated and to have a superior heat-dissipating efficiency.

20 **SUMMARY OF THE INVENTION**

According to the present invention, there is provided a collapsible supporting device for a portable computer. The portable computer has opposite front and rear portions. The supporting device comprises:

25 a coupling seat having a surface, and first and second end portions opposite in a direction;

a pair of elongate base members, each of which has a first pivot end connected pivotally to a corresponding one of the first and second end portions of the coupling seat, and a first abutting end opposite to the first
5 pivot end, the base members being pivotable relative to the coupling seat about first and second axes transverse to the surface of the coupling seat, respectively, the first abutting end of each of the base members being formed with a stopping block;

10 a pair of elongate interconnecting members, each of which has a second pivot end connected pivotally to a corresponding one of the first and second end portions of the coupling seat, and a coupling end opposite to the second pivot end, the interconnecting members being
15 pivotable relative to the coupling seat about third and fourth axes transverse to the surface of the coupling seat, respectively; and

a pair of elongate supporting members, each of which is coupled to the coupling end of a corresponding one
20 of the interconnecting members and has opposite second abutting ends.

The supporting device is operable so as to move from a folded position, where the base members and the interconnecting members are disposed parallel to each
25 other, to a first supporting position, where the interconnecting members are disposed between the base members, where the stopping block on the first abutting

end of each of the base members is adapted to abut against the front portion of the portable computer, where a desired angle is formed between the interconnecting members, and where the supporting members are disposed uprightly such that one of the second abutting ends of each of the supporting members is disposed at a location higher than that of the first abutting end of each of the base members and is adapted to abut against the rear portion of the portable computer.

BRIEF DESCRIPTION OF THE DRAWINGS

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiment with reference to the accompanying drawings, of which:

Figure 1 is an exploded perspective view showing the preferred embodiment of a collapsible supporting device for a portable computer according to the present invention;

Figure 2 is a perspective view showing the preferred embodiment when the supporting device is disposed in a first supporting position;

Figure 3 is a perspective view showing the preferred embodiment when the supporting device is disposed in a folded position;

Figure 4 is a schematic side view showing the preferred embodiment when the supporting device is disposed in the first supporting position for supporting

the portable computer thereon;

Figure 5 is a schematic side view showing the preferred embodiment when the supporting device is disposed in a second supporting position for supporting the portable computer thereon; and

Figure 6 is a fragmentary schematic sectional view of an interconnecting member of the preferred embodiment, taken along line VI-VI in Figure 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Figures 1 to 4 illustrate the preferred embodiment of a collapsible supporting device 200 for a portable computer 900 according to the present invention. The portable computer 900 has opposite front and rear portions 901, 902. The supporting device 200 includes a coupling seat 3, a pair of elongate base members 5, a pair of elongate interconnecting members 4, and a pair of elongate supporting members 6.

The coupling seat 3 has a surface 31, and first and second end portions 33, 34 opposite in a direction (A). In this embodiment, the coupling seat 3 has opposite upper and lower walls 32, 35 disposed spacedly apart from each other, and a connecting block 37 interconnecting the upper and lower walls 32, 35 and cooperating with the upper and lower walls 32, 35 so as to confine a mounting space 36. The upper wall 32 has the surface 31.

Each base member 5, which is formed from a metal plate,

has a first pivot end 51 received in the mounting space 36 in the coupling seat 3 and connected pivotally to a corresponding one of the first and second end portions 33, 34 of the coupling seat 3, and a first abutting end 52 opposite to the first pivot end 51. The base members 5 are pivotable relative to the coupling seat 3 about first and second axes (a, b) transverse to the surface 31 of the upper wall 32 of the coupling seat 3, respectively, as shown in Figure 2. The first abutting end 52 of each base member 5 is formed with a L-shaped stopping block 53.

Each interconnecting member 4 has a second pivot end 41 received in the mounting space 36 in the coupling seat 3 and connected pivotally to a corresponding one of the first and second end portion 33, 34 of the coupling seat 3, and a coupling end 42 opposite to the second pivot end 41. The interconnecting members 4 are pivotable relative to the coupling seat 3 about third and fourth axes (c, d) transverse to the surface 31 of the upper wall 32 of the coupling seat 3, respectively, as shown in Figure 2. In this embodiment, the first and second axes (a, b) are coaxial with the third and fourth axes (c, d) (see Figure 2). As such, the first pivot end 51 of each base member 5 and the second pivot end 41 of each interconnecting member 4 can be connected pivotally to the corresponding one of the first and second end portions 33, 34 of the coupling seat 3 by

means of a respective rivet 8 extending through a mounting hole 342 in the upper wall 32, a pivot hole 411 in the second pivot end 41 of the interconnecting member 4, a pivot hole 511 in the first pivot end 51 of the base member 4, and a mounting hole 352 in the lower wall 35 of the coupling seat 3. Each interconnecting member 4 of this embodiment is a telescopic member that includes an inner tube 43 and an outer tube 44. The inner tube 43 has the second pivot end 41, and is mounted with a spring-loaded positioning ball 432, as shown in Figure 6. The outer tube 44 is formed with a set of positioning holes 442 disposed spacedly apart from each other in an axial direction. The inner tube 43 is operable so as to enable the positioning ball 432 to engage a selected one of the positioning holes 442 in the outer tube 44, as shown in Figure 6.

Each supporting member 6 is coupled to the coupling end 42 of a corresponding one of the interconnecting members 4, and has opposite second abutting ends 61, each of which is provided with an anti-slip pad 610. In this embodiment, each supporting member 6, which is a telescopic member having a configuration similar to those of the interconnecting members 4, includes an inner tube 64 having said one of the second abutting ends 61, and an outer tube 65 sleeved mounted on the inner tube 64 and having the other one of the second abutting ends

61. The inner tube 64 is mounted with a spring-loaded positioning ball (not shown). The outer tube 65 is formed with a set of positioning holes 651 disposed spacedly apart from each other in an axial direction.

5 The inner tube 64 is operable so as to enable the positioning ball to engage a selected one of the positioning holes 651 in the outer tube 65. Each supporting member 6 of this embodiment further includes a C-shaped ring 63 sleeved on the outer tube 65. The

10 C-shaped ring 63 has opposite lug ends 631 connected pivotally to the coupling end 42 of the corresponding one of the interconnecting members 4 by means of a rivet 9 extending through a mounting hole 632 in one of the lug ends 631 of the C-shaped ring 63, a pivot hole 421

15 in the coupling end 42 of the interconnecting member 4, and a mounting hole 632 in the other one of the lug ends 631 of the C-shaped ring 63 such that each supporting member 6 is pivotable relative to the coupling end 42 of the corresponding one of the interconnecting members

20 4.

In actual use, the supporting device 200 is operable so as to move from a folded position, where the base members 5 and the interconnecting members 4 are disposed parallel to each other and where the base members 5 are

25 disposed under the interconnecting members 4, respectively, as shown in Figure 3, to a first supporting position, where the interconnecting members 4 are

disposed between the base members 5, where the stopping block 53 on the first abutting end 52 of each base member 5 is adapted to abut against the front portion 901 of the portable computer 900, where a desired angle is
5 formed between the interconnecting member 4, and where the supporting members 6 are disposed uprightly such that one of the second abutting ends 61 of each supporting member 6 is disposed at a location higher than that of the first abutting end 52 of each base member 5 and is
10 adapted to abut against the rear portion 902 of the portable computer 900, as shown in Figure 4.

In view of the above configuration, the inner tube 43 of each interconnecting member 4 is operable so as to enable the positioning ball 432 to engage a selected
15 one of the positioning holes 442 in the outer tube 44 of the interconnecting member 4 such that each interconnecting member 4 is adjusted to have a desired length when the supporting device 200 is disposed in the first supporting position. Additionally, the inner
20 tube 64 of the supporting member 6 is operable so as to enable the positioning ball to engage a selected one of the positioning holes 651 in the outer tube 65 of the supporting member 6 such that each supporting member 6 is adjusted to a desired height when the supporting
25 device 200 is disposed in the first supporting position. Therefore, the supporting device 200 of the present invention is suitable for supporting portable computers

900 with various sizes. Furthermore, since the rear portion 902 of the portable computer 900 is supported by the supporting device 200 at a location higher than the front portion 901 so as to form a heat-dissipating space between the portable computer 900 and a plane 10 on which the supporting device 200 is disposed, the portable computer 900 can thus be ergonomically operated and has a superior heat-dissipating efficiency.

The supporting device 200 further includes an auxiliary supporting member 7 that has a third pivot end 71 connected pivotally to the coupling seat 3, and a third abutting end 72 opposite to the third pivot end 71. The auxiliary supporting member 7 is movable from a collapsed position to an extended position so as to enable the supporting device 200 to move from the first supporting position to a second supporting position, where the auxiliary supporting member 7 extends transverse to the surface 31 of the upper wall 32 of the coupling seat 3, where the third abutting end 72 of the auxiliary supporting member 7 is adapted to abut against the front portion 901 of the portable computer 900, and where said one of the second abutting ends 61 of each supporting member 6 is adapted to abut against the rear portion 902 of the portable computer 900, such that the portable computer 900 is suspended above the coupling seat 3, as shown in Figure 5. In this embodiment, the third pivot end 71 of the auxiliary supporting member

7 is formed with a pivot groove 711. The coupling seat 3 further has a pivot rod 75 extending along the direction (A) and extending through a through hole 311 in the connecting block 37 and the pivot groove 711 such that the third pivot end 75 is rotatable relative to the coupling seat 3 about the pivot rod 75. The auxiliary supporting member 7 further has a spring 751 sleeved on the pivot rod 75, received in the pivot groove 711, and biasing the auxiliary supporting member 7 to the collapsed position. The third abutting end 72 of the auxiliary supporting member 7 is formed with a flange 721 that is adapted to contact the front portion 901 of the portable computer 900 when the supporting device 200 is disposed in the second supporting position, as shown in Figure 5. As such, for the portable computer 900 mounted with an optical disc carriage 91 in the front portion 901, replacement of a disc 92 can be easily conducted when the portable computer 900 is supported by the supporting device 200 in the second supporting position.

While the present invention has been described in connection with what is considered the most practical and preferred embodiment, it is understood that this invention is not limited to the disclosed embodiment but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation so as to encompass all such modifications

and equivalent arrangements.